

Claim 1

In Applicants' response filed January 21, 2005 (which is incorporated herein by reference), Applicants noted that claim 1 requires determining whether a first device is authorized to have non-media access to a logical device in response to a non-media access request by the first device, "to a logical device at the shared resource for which the first device has no data access privileges." Applicants pointed out that there is simply no teaching or suggestion in O'Hare of authorizing a non-media access request to a logical device from a device that has no data access privileges for that logical device.

In response, the Office Action asserts that each host requestor in the system is allowed certain types of accesses to certain regions of memory, wherein the allowed access types are associated with the host via the host ID in the matrix in Figure 5. *See* Office Action, ¶5, page 11. The Office Action further asserts that the matrix in Figure 5 depicts a scenario where a requestor may not have read and write access, but may have system call access. Applicants respectfully disagree.

In Figure 5 and the accompanying description, O'Hare discloses that access levels can be defined so that each host or group of hosts may be granted a certain level of access to each device or device pool. Three types of access levels are shown, i.e., B, C and M, although O'Hare indicates that more than three potential access levels can be employed. (col. 11, lines 7-9). Thus, O'Hare discloses that each host or group of hosts may be given either B type access, C type access, M type access, or some combination thereof to a particular device or device pool. However, O'Hare does not disclose what degree of access each of the three levels (i.e., B, C, and M) shown in Figure 5 represents. **Nowhere does O'Hare disclose or suggest that either B type access, C type access, M type access, or some combination thereof represents an access level where data access is not permitted, but non-media access is permitted.**

Indeed, it should be appreciated that having the authorization to perform a non-media access typically requires a higher level of privilege than performing a data access, such that in most systems any device having privileges to perform a non-media access request would be expected to also have data access privileges. However, Applicants discovered that it would be advantageous in some circumstances to provide a host with non-media access privileges for

logical devices to which the host does not have data access privileges. An illustrative circumstance where this may be useful is described in Applicants' specification starting at page 49, line 13. When a host computer queries a storage system to see what LUNs are available, the host may stop attempting to discover additional LUNs once it receives notification that a particular LUN is available. For example, a host computer may inquire as to the availability of LUN 1 and may receive a response that LUN 1 is available. The host computer may next inquire as to the availability of LUN 2 and may receive a response that LUN 2 is available. The host computer may subsequently inquire as to the availability of LUN 3 and receive a response that LUN 3 is not available because the host computer does not have data access privileges to this particular LUN. Depending on, *inter alia*, the particulars of the host processor, the type of operating system used by the host processor, and the particulars of the Host Bus Adapter used on the host processor, the host may stop attempting to discover additional LUNs once it receives a response that a LUN is not available. *See* Applicants' specification, page 49, line 28 – page 50, line 4. Thus, the host may not be aware that LUN 4 exists, even though the host has data access privileges to LUN 4. Further, if the host is subsequently granted access to LUN 3, the host would not be aware that LUN 3 is available and the discovery process would have to be repeated for the host to be able to see LUN 3. *See* Applicants' specification, page 50, lines 4-9.

Thus, as is described in the specification starting at page 51, line 8, Applicants have appreciated that providing a host with the ability to perform these non-media access requests to logical devices to which the host has no data access privileges enables the host computer to see all of the logical devices presented by the storage system (including those to which it does not have data access privileges), which may be desirable to enable the host to have visibility to the logical devices to which it does have data access privileges.

There is no recognition of this problem in O'Hare, as is evident from the fact that O'Hare does not disclose a circumstance where a host may not have data access to a device, but may have system administrative access to a device. As discussed above, non-media access typically requires a higher level of privilege than performing a data access, such that in most systems any device having privileges to perform a non-media access request would be expected to also have data access privileges. Thus, there is no suggestion in O'Hare that there would be any reason to

provide the capability of granting a device non-media access privileges to a device that does not have data access privileges, let alone the disclosure of such a capability.

It should be appreciated that the embodiments of the present invention described in Applicants' claims are not limited to the particular example described above, which is provided merely for illustrative purposes to facilitate the Examiner's understanding of at least one application for the aspects of the present invention recited herein. Thus, the Examiner is urged to not rely upon the summary provided above for distinguishing the claims of the present invention over the prior art, but rather, to rely solely on the language of the claims themselves.

As should be clear from the foregoing, O'Hare does not disclose or suggest, "in response to a non-media access request by a first of the plurality of devices to a logical device at the shared resource for which the first device has no data access privileges, determining, based, at least in part, on an identity of the first device, whether the first device is authorized to have non-media access to the logical device," as recited in claim 1. Thus, claim 1 patentably distinguishes over O'Hare.

Claims 2-14 depend from claim 1 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 2-13 under 35 U.S.C. §102(e), and the objection to claim 14, be withdrawn.

Claims 15, 28, and 48

Each of independent claims 15, 28, and 48 also recite a limitation of, for a first device that does not have data access privileges to a logical device or logical volume, determining, "based, at least in part, on an identity of the first device, whether the first device is authorized to have non-media access" to the logical device or logical volume. As should be clear from the foregoing, O'Hare does not disclose or suggest this limitation. Accordingly, it is respectfully requested that the rejections of claims 15, 28, and 48 under 35 U.S.C. §102(e) be withdrawn.

Claims 16-27 depend from claim 15, claims 29-42 depend from claim 28, and claims 49-59 depend from claim 48. Each of these claims is patentable for at least the same reasons as its respective independent claim. Accordingly, it is respectfully requested that the rejections of

claims 16-21, 23-27, 29-41, and 49-57 under 35 U.S.C. §102(e), and the objections to claims 22, 42, 58, and 59, be withdrawn.

Claim 43

Claim 43 is directed to a computer readable medium comprising a data structure relating to access management by a plurality of network devices to data stored on a plurality of logical devices. The data structure includes a plurality of records, each corresponding one of the network devices, and a first record corresponding to a first of the network devices and including configuration information identifying each of the logical devices to which data access by the first network device is authorized. The first record further includes visibility information identifying whether the first network device is authorized to have non-media access to a first of the plurality of logical devices when the configuration information corresponding to the first network device identifies that no data access to the first logical device from the first network device is authorized.

As should be appreciated from the foregoing, there is no teaching or suggestion in O'Hare of providing a data structure relating to access management for network devices wherein a record in the data structure includes visibility information identifying whether a first network device that has no data access privileges to a first logical device is authorized to have non-media access to the first logical device. Accordingly, it is respectfully requested that the rejection of claim 43 under 35 U.S.C. §102(e) be withdrawn.

Claims 44-47 depend from claim 43 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 44-47 under 35 U.S.C. §102(e) be withdrawn.

Claim 60

Claim 60 is directed to a storage system comprising a plurality of storage devices that store a plurality of logical volumes; a data structure to store configuration information; and a filter to selectively forward non-media access requests from a first network device to a first

logical volume when the configuration information identifies that no data access to the first logical volume from the first network device is authorized.

As should be appreciated from the foregoing, O'Hare does not teach or suggest a storage system that comprises a filter that selectively forwards non-media access requests from a first network device to a first logical volume when configuration information identifies that no data access to the first logical volume from the first network device is authorized. Accordingly, it is respectfully requested that the rejection of claim 60 under 35 U.S.C. §102(e) be withdrawn.

Claims 61-66 depend from claim 60 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 61-66 under 35 U.S.C. §102(e) be withdrawn.

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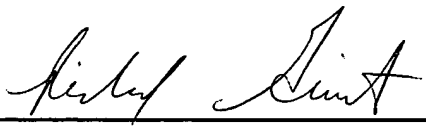
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CONCLUSION

In view of the foregoing remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
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